

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Previously Presented) A method of handling a reflective mask suitable for patterning a projection beam of extreme ultraviolet electromagnetic radiation in a lithographic projection apparatus, comprising:

    handling the mask;

    holding the mask while handling the mask such that the mask is self-aligning in a horizontal direction, the holding comprising cooperation between a first set of connecting structures on the mask and a respective second set of connecting structures on a gripper such that a contact area between the mask and the gripper is minimized.

2. (Original) A method according to claim 1, wherein the first set of connecting structures comprises one of the group comprising a set of projections and a set of recesses, and the second set of connecting structures comprises the other one of the group.

3. (Original) A method according to claim 1, wherein said holding further comprises holding the mask by employing a non-contact force, selected from gravity, an electromagnetic force and combinations thereof.

4. (Currently Amended) A method according to claim 1, wherein said method further comprises:

    transferring the mask from the gripper to a transfer gripper, the transferring comprising:

        moving said transfer gripper into position such that the first set of connecting structures contact a cooperating set of transfer connecting structures in the transfer gripper; and

        holding said mask with said transfer gripper by cooperation of said first set of connecting structures with said cooperating second set of transfer connecting structures.

5. (Original) A method according to claim 1, wherein said method further comprises holding said mask with two grippers, each gripper comprising a respective set of connecting structures which are constructed and arranged to cooperate with a respective set of connecting structures provided in said mask, degrees of freedom of the set of connecting structures of each gripper being complementary to degrees of freedom of the set of connecting structures of the other gripper.

6 – 21. (Cancelled).

22. (Previously Presented) A method of handling a reflective mask suitable for patterning a projection beam of extreme ultraviolet electromagnetic radiation in a lithographic projection apparatus comprising:

kinematically-determined holding said mask while handling, said kinematically-determined holding comprising cooperation of a set of structures on a gripper with a respective set of structures provided in a circumferential region of the mask, said structures selected from the group comprising protrusions and recesses;

wherein the mask is self-aligning in a horizontal direction.

23. (Currently Amended) A method of positioning a mask with respect to a mask gripper, the mask having an imaging portion and locating surfaces fixed with respect to the imaging portion, the gripper having cooperating locating surfaces that can engage the mask locating surfaces comprising:

engaging the gripper locating surfaces with the mask locating surfaces so as to position the imaging portion with respect to the gripper;

maintaining the engagement ~~between the gripper locating surfaces~~ with a non-contact force applied to the mask;

wherein the mask is self-aligning in a horizontal direction.

24. (Original) A method as in claim 23 wherein the force is an electromagnetic force.

25. (Original) A method as in claim 23 wherein the force is gravitational.

26. (New) A method according to claim 2, wherein said set of recesses comprises grooves that are substantially oriented towards a common point.

27. (New) A method according to claim 2, wherein said recesses are provided in respective brackets provided around said mask.

28. (New) A method according to claim 2, wherein said mask is provided with at least two sets of recesses adapted for cooperation with respective sets of protrusions of separate grippers.

29. (New) A method according to claim 22, wherein said holding further comprises holding the mask by employing a non-contact force, selected from gravity, an electromagnetic force and combinations thereof.

30. (New) A method according to claim 22, wherein said method further comprises:

transferring the mask from the gripper to a transfer gripper, the transferring comprising:

moving said transfer gripper into position such that the set of structures of the mask contact a cooperating set of structures in the transfer gripper; and

holding said mask with said transfer gripper by cooperation of said set of structures of the mask with said cooperating set of structures in the transfer gripper.

31. (New) A method according to claim 22, wherein said method further comprises holding said mask with two grippers, each gripper comprising a respective set of structures which are constructed and arranged to cooperate with a respective set of structures provided in said mask, degrees of freedom of the set of structures of each gripper being complementary to degrees of freedom of the set of structures of the other gripper.

32. (New) A method according to claim 22, wherein said set of recesses comprises grooves that are substantially oriented towards a common point.

33. (New) A method according to claim 22, wherein said recesses are provided in respective brackets provided around said mask.

34. (New) A method according to claim 22, wherein said mask is provided with at least two sets of recesses adapted for cooperation with respective sets of protrusions of separate grippers.

35. (New) A method according to claim 23, wherein the gripper locating surfaces comprises one of the group comprising a set of projections and a set of recesses, and the mask locating surfaces comprises the other one of the group.

36. (New) A method according to claim 35, wherein said set of recesses comprises grooves that are substantially oriented towards a common point.

37. (New) A method according to claim 35, wherein said recesses are provided in respective brackets provided around said mask.

38. (New) A method according to claim 35, wherein said mask is provided with at least two sets of recesses adapted for cooperation with respective sets of protrusions of separate grippers.

39. (New) A method according to claim 23, wherein said method further comprises:

transferring the mask from the gripper to a transfer gripper, the transferring comprising:

moving said transfer gripper into position such that the mask locating surfaces contact a cooperating set of locating surfaces in the transfer gripper; and

holding said mask with said transfer gripper by cooperation of said mask locating surfaces with said cooperating set of locating surfaces in the transfer gripper.

40. (New) A method according to claim 23, wherein said method further comprises holding said mask with two grippers, each gripper comprising a respective set of locating surfaces which are constructed and arranged to cooperate with a respective set of locating surfaces provided in said mask, degrees of freedom of the set of locating surfaces of each gripper being complementary to degrees of freedom of the set of locating surfaces of the other gripper.